REMARKS

Claim 20 has been added. Claims 1-20 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

1-2. Claims 1, 3-12 and 14-19 currently stand rejected for allegedly being obvious in view of the combined subject matter disclosed in U.S. Patent 5,526,053 to Dorricott (hereinafter "Dorricott") and U.S. Patent 5,446,497 to Keating (hereinafter "Keating").

Claim 1

Regarding claim 1, assuming for the moment, without admitting, that Dorricott and Keating are properly combinable, the combined teaching fails to either disclose or suggest the claim feature of:

> "mixing the video information values by multiplying the first video information value by a first weighting factor, the second video information value by a second weighting factor, the third video information value by a third weighting factor, and the fourth video information value by a fourth weighting factor and adding the weighted video information values to obtain a video information value of the pixel of the intermediate image, the weighting factors being chosen such that the video information value of the pixel of the intermediate image lies within the determined first or second intervals." (cl. 1)

The Official Action contends that Dorricott teaches everything in claim 1, except for the "mixing" feature noted above. (pgs 2-3). The Official Action then contends that "*Keating et al. teaches mixing of the video information values with the weighted video information (interpolation coefficient) values so obtained in order to obtain a video information value of the pixel of the intermediate image (output field), the weighting factors being chosen such that this*

video information value lies within the interval determined (The output pixel is obtained by combining the values of the pixels located in the progressive scan frame.) (col. 15 lines 36-66)." (pg 3). The Official Action concludes that "*at the time of the invention it would have been obvious to a person of ordinary skill in the art to mix video information with weighting factor to predict interpolated pixel in the method of Dorricott et al. The suggestion/motivation for doing so would have been that to locate the appropriate pixels in the pair of frames are combined to produced optimized output pixel and both references are for the use and processing of motion vectors. Therefore, it would have been obvious to combine Keating et al. with Dorricott et al. to obtain the invention as specified in claim 1.*" (pg 4). It is respectfully submitted that this is an impermissible reading of the references, in particular, Keating.

Keating teaches, as illustrated in FIG. 10, that "*the outputs of the multiplexer 20 are supplied to a pixel vector selector 40 the outputs of which is connected to an interpolator 41.*" (col. 14, lines 52-54). "*The purpose of the pixel vector selector 40 is to select from the input frame of motion vectors* ***a motion vector*** *for each pixel of the output field to be produced.*" (col. 14, lines 62-64, emphasis added). Thus, according to a fair and proper reading, Keating teaches that the selector 40 outputs a single motion vector to the interpolator 41 for each pixel of the output field to be produced. Therefore, the interpolator uses a single motion vector to produce each output pixel, and not first and second motion vector as recited in claim 1.

Furthermore, Keating teaches that "*the interpolator 41 generates the pixels of each output field by interpolation between the two progressive scan frames supplied thereto for that output field, each output field consisting of alternate lines of pixels in dependence upon whether the field is an odd field or an even field to provide the required 2:1 interlace in the output signal. For each output pixel, the interpolator 41 uses* ***the motion vector supplied for that output pixel.***

and the correct temporal position along the motion vector for output pixels in that field, as indicated by the interpolation coefficient I(A:B) supplied thereto, to locate the appropriate pixels in the pair of progressive scan frames which are to be combined to produce the output pixel. The value of each output pixel is obtained by combining the values of the pixels located in the progressive scan frames with appropriate weighting in dependence upon the interpolation coefficient as described earlier." (col. 15, lines 36-53, emphasis added). Thus, Keating merely teaches that each interpolated output pixel results from an application of the interpolation coefficient I(A:B) to two pixels associated with a single motion vector, with a first one of the two pixels being in a first one of the two progressive scan frames and the second one of the two pixels being in a second one of the two progressive scan frames.

The Official Action further contends that "*Keating teaches (1) two motion vectors (Fig. 11); (2) each vector having two pixels for a total of four pixels (Fig. 11, 2 pixels in Frame 1 and 2 pixels in frame 2.)....*" (pg 8, second paragraph). However, according to a fair and proper reading of Keating, FIG. 11 merely illustrates the testing process undertaken by the selector 40 to select a single motion vector to output to the interpolator 41. (col. 14, lines 62 to col. 15, line 35). Specifically, the "*purpose of the pixel vector selector 40 is to select from the input frame of motion vectors a motion vector for each pixel of the output field to be produced. A pixel vector selection process is described in detail in said U.S. Pat. No. 5,005,077 referred to above. The present embodiment* [*utilizes*] *a simplified version of the process described in U.S. Pat. No. 5,005,077 as follows. For each output pixel, the motion vectors, supplied on the output Vb of the multiplexer 20, which corresponds to a block of pixels surrounding the output pixel position are tested.... FIG. 11 illustrates schematically two motion vectors (vector 1 and vector 2) to be tested for an output pixel 50 of an output field 52 to be generated from two 24Hz frames, frame 1*

and frame 2." (col. 14, line 62 to col. 15, line 16). "*The SAD value is calculated for each of the motion vectors to be tested for each output pixel, and the motion vector having the lowest SAD value is selected as the motion vector for the output pixel. The output pixel vectors are then supplied by the pixel vector selector 40 to the interpolator 41.*" (col. 15, lines 29-35).

Keating fails to teach or suggest that the interpolated pixel results from the use of: (1) two motion vectors; (2) each vector having two pixels for a total of four pixels; and (3) four weighting factors – one for each video information value, as in the present claimed invention. As a result of the use of two pixels instead of four pixels, the interpolated pixel in Keating contains less video information than the interpolated pixel in the present claimed invention. In addition, Dorricott, in the cited section of column 9, lines 19-29 which refer to FIG. 9, discloses the use of two motion vectors Va and Vb in determining a block 520 of pixels of the output field: "*projection of the motion vectors Va and Vb along the respective vector directions leads to a block 520 of the output field being assigned both of the motion vectors Va and Vb.*" Since Keating, as discussed above, teaches the use of a single motion vector instead of two motion vectors in determining the interpolated pixel, there is no reasonable expectation of success of achieving all of the features of the "mixing" step of claim 1 and also of determining the block 520 of pixels of the output field of Dorricott if the teachings of Dorricott and Keating were combined as suggested in the Official Action. Thus, the combined teachings of Dorricott and Keating fails to disclose at least the features of claim 1 of "*mixing the video information values by multiplying the first video information value by a first weighting factor, the second video information value by a second weighting factor, the third video information value by a third weighting factor, and the fourth video information value by a fourth weighting factor and adding the weighted video information values to obtain a video information value of the pixel of the*

intermediate image, the weighting factors being chosen such that the video information value of the pixel of the intermediate image lies within the determined first or second intervals." As such, the combined references are incapable of rendering claim 1 obvious.

In light of the foregoing, it is respectfully requested that the obviousness rejection with respect to claim 1 is moot and should be removed, and that claim 1 is in condition for allowance.

Claim 12

As claim 12 currently stands rejected for the identical reasons as claim 1, the arguments above with respect to claim 1 are equally applicable to claim 12. As a result, it is respectfully requested that the obviousness rejection with respect to claim 12 is moot and should be removed, and that claim 12 is in condition for allowance.

Claims 3-11 and 14-19

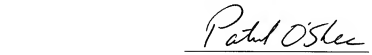
Claims 3-11 and 14-19 depend directly on claims 1 and 12 and should be allowable for at least the same reasons as the claims from which they depend.

3. The indication that claims 2 and 13 are objected to but would be allowable if rewritten to no longer depend on a rejected base claim is noted and appreciated.

For all the foregoing reasons, reconsideration and allowance of claims 1-20 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,



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